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MINNESOTA DEPARTMENT OF ECONOMIC SECURITY

RESEARCH AND STATISTICAL SERVICES OFFICE

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Manuscripts of articles are welcomed and should be submitted to the Editor. Articles on labor market conditions and the economic welfare of Minnesota workers are preferred, but subjects which can be shown to be closely related to general economic conditions within the State will also be considered. Articles should be submitted complete with tables and graphs. Length generally should not exceed the equivalent of ten single-spaced typewritten pages, including graphs, references, and notes.

All signed articles appearing in this publication together with the Editorial Comment represent the views of the author or editor and not necessarily those of the Department. Questions or comments to the authors may be directed to the Research and Statistical Services Office of the Minnesota Department of Economic Security, 390 N. Robert Street, St. Paul, Minnesota, 55101 or (612) 296-6545.

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Editorial Comment

SOME NEW FEATURES

By R. Pinola

As a producer and disseminator of labor market information, we publish material that adds to our knowledge of labor market and economic conditions. With this issue of the Review, we begin publishing forecasts of real GNP and Minnesota payroll employment on a regular basis. These forecasts are produced by Charles Cline of our research staff, using the Vector Autoregression model developed for us by Rao Aiyagari. We hope that readers will find these forecasts not only interesting, but useful in assessing future labor market conditions. In the months ahead, we will introduce readers to regular forecasts of unemployment insurance cash flows, together with periodic comments on structural changes taking place in Minnesota's economy, particularly on how these changes affect the various demographic and occupational groups of our population. Naturally, we would appreciate any comments on these features from our readers.

A NEW ROLE FOR UNEMPLOYMENT INSURANCE

Although recent debates on Workers' Compensation and Unemployment Insurance (U.I.) have focused primarily on the cost and financing of these programs, new interest, albeit belated, is developing with respect to the purpose of these programs and how they can (should) be integrated with overall manpower and economic policy. In the case of U.I., a variety of proposals have surfaced for blending jobless benefits with training. These have ranged from the use of vouchers based on benefit eligibility to outright referrals of recipients to training programs. In Europe, direct linkages between U.I. and training is fairly well established, using different criteria on which the linkages are based. Even these systems, however, lack the universality that may be preferable to schemes that are restricted to particular classes of workers or conditions.

Eight years ago, we suggested that the time had come when our U.I. system might be transformed into one of lifetime wage credits, to be used by the worker at his or her discretion to underwrite periodic training that went beyond the current (usually 26 weeks) limitation on "approved" training. To provide a disincentive against the frivolous use of our option, we recommended that training could be limited to an accepted list of programs by the State Department of Education and for which specific skills are in demand. To further preclude the frivolous use of the option, we suggested that an individual be permitted to draw out some portion of unexpended wage credits upon permanent retirement from the work force. This portion could be a prorated share based on contributions that the individual had made to the fund or some other acceptable scheme.

Financing of the lifetime wage-credit program could be established on essentially the same basis as the current U.I. system, except that workers would also contribute.1/ With both the worker and employer contributions based on experience-rating, there would be an added inducement not to utilize the wage credits to satisfy every whimsy or fancy that might otherwise be tempting.

1/ Workers already contribute in 17 industrial nations.

Moreover, with only the employer paying under current legislation, there is evidence that intensive job search is often postponed until benefit eligibility is exhausted. With workers not only sharing in the financing of the program, but able to have more control over the use of their wage credits, we create a condition where social (fiscal) responsibility and individual responsibility become an integral part of the system. It seems that if we are as concerned about the need for human capital formation as physical capital formation, we should be prepared to promote and establish social policy that promotes the former equally with the latter.

Looking at current U.I. programs, it is obvious that they do not really encourage human capital formation. It might even be said that they actually discourage human capital formation by paying people to be idle. We think this is contrary to social policy. It should also be noted that current legislation provides no reward to the worker who through diligence and good work habits manages to remain employed. We feel that a lifetime wage-credit system of the type suggested here would induce those whose skills and competencies are in jeopardy to either upgrade those skills or obtain new marketable ones without having to wait for the inevitable to happen, while at the same time making the system more equitable in terms of benefits received. Since U.I. is, in reality, a system of deferred wages, a system of lifetime wage-credits would provide the diligent worker and who possesses good work habits with some equitable sharing of those accrued wage deferrals upon retirement. It is also telling employers and workers that the cost of lifetime wage credits for promoting human capital formation is no less a legitimate cost than depreciation allowances on plant and equipment. In fact, we would recommend that the workers' contributions be deductible on both Federal and State income taxes as a legitimate expense, just as employer-paid taxes are an accepted cost of doing business. Obviously, we do not expect the lifetime wage-credit system to eliminate unemployment or the necessity of paying U.I. bene[illegible]o idle workers, but it would introduce an element of social and individual responsibility that is currently lacking into the system.

Research Summaries

EMPLOYMENT OF SCIENTISTS, ENGINEERS, AND TECHNICIANS IN THE MANUFACTURING SECTOR, 1977-80

By B. Steuernagel

One of the distinguishing characteristics of "high technology" industries is a greater than average concentration of engineering and scientific skills and capabilities which are required to generate a rapid series of technological advancements. The National Science Foundation (NSF) recently analyzed national trends in the employment of scientists, engineers, and technicians in the manufacturing sector between 1977 and 1980 utilizing the data collected by the Occupational Employment Statistics Program. This article summarizes the NSF study1/ and compares the employment growth of scientists, engineers, and technicians in Minnesota's manufacturing industries in U.S. growth.

In 1977 there were approximately 1,100,000 people working as scientists, engineers, and technicians (SET) in the Nation's manufacturing industries, approximately 6 percent of total manufacturing employment. Between 1977 and 1980, employment of SET personnel grew by nearly 20 percent while total manufacturing employment grew by only 2.6 percent. According to the study, SET personnel accounted for 45 percent of total manufacturing employment growth during the three year period.

There are several reasons for the rapid growth of SET jobs during the period studied. First, a small part of SET employment was generated by the modest employment gains made by the manufacturing sector as a whole. Secondly, product demand was not uniform across all manufacturing industries. Demand was much stronger in the durable goods high technology industries. The recession of January through July 1980 adversely affected employment in the non-high tech manufacturing industries such as lumber and steel while employment in the computer industry grew by over 18,500 jobs. As mentioned in the introduction, since high-tech industries are more reliant on SET personnel, overall employment growth in the high-tech industries contributed to more rapid increases in SET occupational growth. The primary factor causing rapid growth in SET employment, according to the study, involved changes in industrial staffing patterns. In durable goods industries, nearly 75 percent of SET employment growth resulted from changing staffing patterns - a growing share of total employment held by SET jobs. The growing concentration of SET personnel was most evident in the 13 manufacturing industries which experienced declines in total employment between 1977 and 1980. Instead of declining by 3 percent as might have been anticipated, SET employment grew by 11 percent. Although this indicates a structural shift in the staffing pattern, it is not yet evident whether there is a long-term shift in the occupational structure favoring SET personnel or merely a short-term shift due to the impact of the recession on production occupations.

The following table shows the employment growth of major SET occupations in the manufacturing industries between 1977 and 1980 in the Nation.

1/ Changing Employment Patterns of Scientists, Engineers, and Technicians in Manufacturing Industries: 1977-80. (NSF 82:331) National Science Foundation, Division of Science Resources Studies, Washington, D.C. 20550.

Table 1. U.S. Science, Engineering, and Technician Occupational Employment in Manufacturing

Occupation	Employment (Thousands) 1977	1980	Change Percent 1977-80
Scientists, total	122	145	19
Chemists	54	57	5
Computer systems analysts	40	53	32
Life	9	11	22
Mathematical	9	8	-17
Other	12	17	44
Engineers, total	506	606	20
Electrical/electronic	142	160	13
Mechanical	112	127	13
Industrial	63	123	95
Other	189	196	4
Technicians, total	494	594	20
Electrical/electronic	106	136	28
Engineering, except electrical/ electronic	224	253	13
Computer programmers	50	73	45
Science	61	71	18
Other	53	61	16
Total, All Manufacturing Employment	19,721.3	20,227.8	2.6

The results of the Occupational Employment Statistics surveys of manufacturing in Minnesota in 1977 and 1980 show that SET employment grew by 33.7 percent while total manufacturing employment grew by 9.7 percent.

Table 2. Minnesota Science, Engineering, and Technician Occupational Employment in Manufacturing

Occupation	Employment 1977	1980	Percent Change 1977-80
Scientists	1,880	3,170	68.6
Engineers	11,630	15,310	31.6
Technicians	15,090	19,760	30.9
Total, All Manufacturing Employment	338,420	371,330	9.7

Employment of chemists and computer systems analysts make up about 75 percent of the total number of scientists employed in manufacturing both in the Nation and Minnesota. Employment of chemists grew primarily as a result of their importance in the development of new product lines, their contribution to the fields of energy and pollution control, and general increases in R&D funds available to major industrial employers of chemists. Employment of computer systems analysts increased very rapidly as computer technology was applied to manufacturing functions. The supply of computer systems analysts was created by a high degree of mobility from personnel in other science and engineering fields. For example, of the 21,000 computer scientists in 1980 who had received bachelor's and master's degrees in science and engineering fields two years earlier, only 40 percent had majored in computer science. Those who had majored in math accounted for 22 percent, engineering majors made up 11 percent, and social science majors made up 9 percent.

About one-half of all engineers in the country work in the manufacturing sector. Over-two-thirds of the 606,000 engineers are employed in three fields: electrical/electronic, mechanical, and industrial. Between 1977 and 1980, employment of industrial engineers grew at a faster rate than any other SET field in manufacturing. According to the NSF study and industrial engineering professional societies, this rapid growth was a reflection of industry's increased concern about productivity growth, cost reduction, and quality improvement.

The two largest technician occupations in the manufacturing sector are electrical/electronic technicians and drafters. Data for Minnesota shows that computer programmers and electrical/electronic technicians were the largest in terms of employment. Nationally, the employment of electrical/electronic technicians has grown rapidly in conjunction with the strong demand for electrical/electronic engineers in the development and application of microelectronics telecommunications, office automation, and robotics.

The Job Market

THE HEALTH AND MEDICAL SERVICES INDUSTRY

By B.J. Jones

Employment in the Health and Medical Services Industry has suffered little from the general business cycle. The steady growth over the past 22 years has resulted in a trippling of employment in Minnesota since 1960. While most industries in Minnesota have posted losses in the monthly employment when compared to year-ago figures, the Health and Medical Service Industry has shown modest gains. This article will look briefly at the Health and Medical Services Industry.

The Industry

The Health and Medical Services Industry includes establishments primarily engaged in furnishing medical, surgical, and other health services to persons. Associations or groups primarily engaged in providing medical or other health services are included. Health services included in this group are offices of physicians, dentists, osteopathic physicians, chiropractors, optometrists, and health practitioners, hospitals, nursing and personal care facilities, medical and dental laboratories, outpatient care facilities, and other miscellaneous health and allied services such as blood banks, medical photography and art, and visiting nurses' associations.

There are 4,900 Health and Medical Service establishments in Minnesota employing 134,400 workers. This industry comprises eight percent of the State's nonagricultural wage and salary employment. Approximately 55 percent of these workers are employed in the Minneapolis-St. Paul nine-county metropolitan area. Employment in this industry grew by 52.3 percent from 1970 to 1978 and is expected to increase another 31.5 percent by 1985.1/

Approximately 45 percent of these employees work in hospitals, 27 percent in nursing homes, and 15 percent in Doctor's offices. The remaining 13 percent are dispersed among the Dentists and Health practitioners offices, medical and dental laboratories, and outpatient care facilities.

Occupational Staffing Patterns

Occupational staffing patterns for the Health and Medical Services Industry, as shown in Table I, indicate that over 90 percent of the workers fall into three broad occupational categories; namely, Service Workers, Professional and Technical Workers, and Clerical Workers.

Service Workers comprise the largest proportion (45 percent) of the workers in this industry. After increasing by 51 percent from 1970 to 1978, the employment of Service Workers is expected to rise another 33 percent by 1985, with the proportion of Service Workers remaining fairly constant (44.6 to 45.0 percent). Ninety percent of the employees in this category are represented by the following occupations: Nurses Aides/Orderlies (42.8 percent), Licensed Practical Nurses (13.6 percent), Interior Building Cleaners (8.7 percent), Food Service Workers (6.9 percent), Health Aides, except nursing (6.4 percent), Dental Assistants (5.1 percent), Janitors and Sextons (4.6 percent), and Cooks (4.0 percent).

1/ All references to 1985 employment or staffing patterns are based on data from Minnesota Employment Outlook to 1985, Minnesota Department of Economic Security Research and Statistical Services Office, January 1981.

Although the number of Professional and Technical workers is increasing, there appears to be a downward trend in their strength in this industry. The number of Professional and Technical workers rose by 48 percent from 1970 to 1978 compared with 52 percent for the industry, and is expected to rise another 25 percent by 1985 compared with a projected 32 percent increase for the industry. This is partly due to the relatively slow expansion in the number of Registered Nurses. They comprise 37.0 percent of the Professional and Technical Workers and their number expanded at the rate of 34 percent and 20 percent for the 1970-78 and 1978-85 periods respectively. In addition to Registered Nurses, the other major occupations in this category are Clinical Laboratory Technicians and Technologists (11.6 percent), Dentists (5.7 percent), Therapists (5.1 percent), and Radiological Technicians and Technologists (4.0 percent).

An upward trend in the proportion of Clerical employees is also noticeable in Table I. They experienced strong growth during the 1970-78 period (59 percent) and are expected to increase another 36 percent by 1985. The dominant occupations in this field are: Receptionists (27.0 percent), General Secretaries (21.2 percent), Miscellaneous Clerical Workers (12.7 percent), Bookkeepers (11.0 percent) Medical Secretaries (8.1 percent) and Typists (4.5 percent).

Workers in the remaining six broad occupational categories constitute eight percent of the industry's total employment. Among the Craft workers, Stationary Engineers (23.3 percent) and Dental Laboratory Technicians (22.2 percent) dominate. Other occupations in the Craft field with significant numbers are Blue Collar Worker Supervisors (9.7 percent), Painters (7.4 percent), Carpenters (6.8 percent), and Electricians (5.3 percent). Nearly 64 percent of the Operative Workers are Laundry/Dry Cleaning Operatives.

Health Adiministrators account for 76.9 percent of the Managerial occupations, while Office Managers (10.2 percent), Purchasing Agents and Buyers (3.5 percent), Miscellaneous Managers (3.2 percent), and Financial Managers (2.6 percent) round out the list of significant occupations in this category.

Finally, Laborers, who represent less than one percent of the total, fall basically into two groups, Stockhandlers (43.6 percent) and Gardeners and Groundskeepers (33.5 percent).

Overall the employment outlook for this industrial sector should continue to be very good through the 1980s. The greatest number of job opportunities are expected to be for service, technical, and clerical workers.

TABLE I

Occupational Staffing Patterns For The Health & Medical Services Industry2/

	Percent of Industry Employment		
Occupational Groups	1970	1978	1985
Professional, Technical, & Kindred	32.1	31.3	29.6
Managers, Officials, & Proprietors	2.9	3.4	3.3
Sales	0.1	0.1	0.1
Clerical	15.4	16.1	16.7
Craft & Kindred	2.2	1.9	1.9
Operatives	2.1	2.3	2.9
Service	44.9	44.6	45.0
Laborers except Farm	0.4	0.4	0.5
Farm Laborers	0.0	0.0	0.0

2/ Source: Minnesota Employment Outlook to 1985, Minnesota Department of Economic Security, Research and Statistical Services Office, January 1981.

SUPPLY/DEMAND FOR SPECIFIC OCCUPATIONS, APRIL 1983[1/]

By S. Hamper

MINNESOTA

Shortage Occupations: computer programmers and systems analysts#, commissioned sales persons#, highly skilled clerical workers#

Surplus Occupations: *general office clerks, retail sales clerks#, construction workers#, welders, machinists#, truck drivers#, factory workers#, general laborers#*

CENTRAL MINNESOTA

Shortage Occupations: commissioned sales persons#

Surplus Occupations: *general office clerks#, retail sales clerks#, waiters/waitresses, welders#, machinists#, assemblers#, unskilled construction laborers#*

MINNEAPOLIS-ST. PAUL

Shortage Occupations: computer programmers and systems analysts#, commissioned sales persons#, highly skilled clerical workers#, fast-food service workers

Surplus Occupations: *truck drivers#, machinists#, factory assemblers#, general laborers#*

NORTHEASTERN MINNESOTA

Shortage Occupations: commissioned sales persons, life insurance sales agents

Surplus Occupations: *electrical engineers#, social workers#, teachers#, entry level managers, mechanical drafters#, secretaries#, typists#, general office clerks#, bookkeepers#, sales clerks#, food service workers, waiters/waitresses#, food production workers#, welders#, heavy equipment operators#, truck drivers#, auto mechanics#, carpenters#, painters#, bricklayers#, pipefitters#, millwrights#, mining workers#, construction and general laborers#*

NORTHWESTERN MINNESOTA

Shortage Occupations: home health care workers, food service workers

Surplus Occupations: *machinists, welders, construction workers#, unskilled factory workers#, general laborers#*

SOUTHERN MINNESOTA

Shortage Occupations: sales representatives#, experienced automotive mechanics, tractor-trailer drivers#

Surplus Occupations: *nearly all occupational skills are well-represented in the active applicant files, but factory/production workers were most frequently mentioned as a significant surplus*

1/ Shortage occupations are those that are difficult to fill or go unfilled due to the lack of qualified applicants. Surplus occupations are those in which the number of qualified applicants greatly exceeds the number of openings.

\# This occupation has been listed as a shortage or surplus occupation in at least two out of the last three quarters of the Review.

Job Service Applicant Supply and Demand

Table 1 compares Job Service (J.S.) job applicants with the J.S. job openings that existed at the end of the month. These comparisons are expressed as supply/demand ratios. Other things being equal, the greater the ratio of applicants to openings, the greater the competition has been for work within that occupational category. To put these ratios into context, the reader must remember that not only do job seekers and employers in general find jobs or recruit workers through other means, but those interested in certain kinds of jobs are particularly unlikely to use the J.S. For example, workers seeking professional and managerial jobs are least likely to use the J.S., whereas employers usually recruit construction workers through union halls and hire teachers directly. Thus, the main value of Table 1 is that it reflects, for broad occupational groups, the relative labor market conditions that those using the J.S. encountered when seeking work. Readers who desire information on current shortage and surplus conditions for a specific occupation should refer to the Supply/Demand assessments given above.

Table 1. Experienced Supply/Job Openings Demand[1/]

Occupation	Applicants (Supply) April 1983	Job Openings (Demand) April 1983	Supply/Demand Ratio	
			April 1983	April 1982
Total	108,196	4,850	22.3	11.2
Prof., Tech., Mgr.	12,853	491	26.2	10.6
Clerical	16,634	892	18.6	10.8
Sales	4,639	795	5.8	4.1
Dom. Services	1,262	81	15.6	8.1
Other Services	14,819	1,062	14.0	5.7
Farm., Fish., For.	2,473	68	36.4	50.7
Processing	2,541	261	9.7	7.5
Machine Trades	7,916	102	77.6	20.1
Benchwork	6,275	141	44.5	21.9
Structural Work	15,959	194	82.3	38.2
Mtr. Frght., Trans.	4,983	112	44.5	18.8
Pkg. & Mat. Hndlg.	11,289	614	18.4	13.9
Other	6,553	37	177.1	30.1

1/ Inexperienced and improperly coded job applicants are not included in this table.

NOTE: The number of job openings appears drastically reduced from the previous few months. This is due to the fact that a large number of openings were listed as cancelled this month. Many of these were openings closed or cancelled over a period of several months, but not properly recorded as such. This problem was finally addressed and many bogus openings were removed from the total openings available count in April.

Feature Article

HIGH TECHNOLOGY: MYTH AND REALITY

By R. Pinola*

High technology has not only become a "buzz" word among the pedants of modern business, but a panegyric to the cult of scientism. Like the obsession with automation in the 1950s, high technology has received inordinate publicity, both good and bad. On the one hand, we have the sophists proclaiming it as the wave of the future and a guarantor of our economic salvation, while on the other hand, the less sanguine regard it with alarm. To add to the confusion, attempts at defining high technology, like defining automation in the earlier days, have been less than auspicious. This article attempts to look at high technology for what it is and to examine some of the myths that seem to prevail about its effects on jobs, employment growth, and education and skill requirements of the labor force.

Defining the Term and the Problems

Conceptually, high technology, like automation, is nothing more than the application of scientific inquiry and knowledge to industrial and commercial processes that have been with us for over two centuries. As such, its application is not unique to any one industry and is found wherever opportunities exist. One can regard Adam Smith's observations over two hundred years ago with respect to the pin factory and the division of labor as an application of high technology of his day. So, too, can the application of scientific methods and processes elsewhere. Over the intervening years, these applications have been pervasive, favoring first one activity and then another. In more recent times, these applications have cut across all industries as the diffusion of new knowledge and techniques became widespread.

Despite the aforementioned observations, high technology in recent years has been treated as if it is a new phenomenon and unique to a few or selected industries. Thus, in a recent article, Ann Lawson proceeds to define high technology industries on the basis of the ratio of science and engineering to total industry employment and the ratio of research and development expenditures to total spending. 1/ She qualifies her choices to those manufacturing industries in which "... accelerating technological growth (is) associated with the germination and evolution stages along their respective S-curves". 2/ Other studies appear to be following essentially the same or similar criteria as those of Lawson. Although we see no great inherent harm in categorizing some industries as high technology industries, the inordinate attention focused on them has led to some clearly questionable and unwarranted assumptions. This focus has taken two forms; namely, the issue of national survival and the promise of jobs growth in an environment requiring increasing skills of the labor force.

1/ See, Ann M. Lawson, "Technological Growth and High Technology In U.S. Industries", In Industrial Economics Review, U.S. Department of Commerce, Spring 1982.

2/ Lawson employs the familiar S-curve concept in which germination, evolution, and maturation comprise the different stages of growth in which each stage proceeds at a different rate.

*This article was prepared by R. Pinola, Director Research and Statistical Services Office of the Minnesota Department of Economic Security. Richard Johnson and Beverly Jones provided the data tabs on which Tables 2 and 3 are based.

With regard to the issue of national survival, it has been argued that our military capability to defend ourselves and our competitive position in world trade depend heavily on high technology and, therefore, we must give special consideration for its promotion. In some cases, explicit policy formulation for promoting high technology has taken the form of special concessions to high technology industries and recommendations for a re-direction of education effort to the physical sciences. With respect to jobs growth, the implication is that future growth will be reserved for high technology industries and jobs, while other industries and jobs are destined for decline or zero growth. 3/

As an economist and sometime student of political and social systems, we have no reason to quarrel with the assumption that high technology, regardless of how defined, is a necessary condition for maintaining a strong military posture. However, national survival involves more than military strength. It involves factors that have no relationship to high technology and, in many cases, are so elusive as to defy measurement and control. If the concern is our ability to compete in world trade, it seems that our balance of payments problems are not so much the result of lagging technology as they are of accelerating prices for imported oil, an over-valued dollar, and inflated labor costs. Whether the inflated labor costs are due to fiscal and monetary policies in support of an artificially high aggregate demand and price structure, or whether they are due to the intransigence of labor and poor management is a moot question. The real issue is whether lagging technology has been directly responsible for labor costs in the United States rising faster than abroad in those industries in which our comparative advantage has been slipping. Unfortunately, rhetoric and superficial analyses provide poor answers. In the end, linking national survival and high technology remains a questionable exercise and, therefore, the dividing line line between myth and reality is tenuous.

With respect to the promise of jobs growth and increasing skill requirements of the labor force, one is on more solid ground inasmuch as the available data allows the more straightforward drawing of conclusions. In this regard, we can utilize the delineation of high technology industries that have been made by Ann Lawson and other researchers. We not only can compare employment opportunities in the high technology with other industries, but consider how educational and skill requirements are likely to change as a consequense of projected future growth in economic activity and occupational employment. Table 1, which follows, is a simple matrix that identifies the high technology industries as defined in the studies by Ann Lawson, the Massachusetts Division of Employment Security, and the Florida Department of Commerce. This is not meant to preclude other definitions, only to illustrate the consensus that seems to prevail with regard to defining high technology industries. As can be seen, the industries

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3/ It is interesting to observe that the "high tech", growth industries are invariably identified as being in the manufacturing sector while at the same time the manufacturing sector is projected to comprise a decreasing portion of total employment.

so identified in all three studies are exclusively in the manufacturing sector and are pretty much in agreement.

Table 1. Industries Defined as High Technology

SIC Code and Industry		Lawson	Massachusetts	Florida
283	Drugs	X	X	X
29	Petroleum Refining	X		
348	Ordnance and Accessories			
357	Office Computing and Accounting Machines	X	X	
3573	Electronic Computing Equipment			X
361	Electric Transmission and Dist. Equipment	X	X	
362	Electrical Industrial Appliances	X	X	
363	Household Appliances	X	X	
364	Electric Lighting and Wiring Equipment	X	X	
365	Radio and TV Receiving Equipment		X	
366	Communications Equipment	X	X	X
367	Electronic Computing Accessories	X	X	X
369	Misc. Electrical Mach Equip. and Supplies	X	X	
372	Aircraft and Parts	X		X
376	Guided Missiles and Space Vehicles	X	X	X
381	Engineering, Laboratory, Scientific and Research Instruments and Equipment	X	X	X
382	Measuring and Controlling Instruments	X	X	X
383	Optical Instruments and Lenses	X	X	X
384	Surgical, Medical, and Dental Instruments and Supplies	X	X	X
385	Opthalmic Goods	X	X	X
386	Photographic Equipment and Supplies	X	X	
387	Watches, Clocks, Clockwork Devices and Parts	X	X	

Because the Lawson study was the most definitive in terms of criteria used to define high technology industries, we adopted it for an evaluation of jobs growth and skill and education requirements. To gain a perspective on employment growth, we compared, for both the U.S. and Minnesota, the past growth rates for these industries against industries not so classified that had high rates of growth in the reference period 1970-81. This was done to see if the emphasis on high technology industries, in contrast to other industries, was warranted. We also made comparisons of projected employment growth rates for the U.S. and Minnesota for the high technology and not-so-classified industries to see if the promise of jobs growth in the high technology industries is justified. These are provided in Tables 2 and 3 for the U.S. and Minnesota. Finally, inasmuch as growth rates by themselves can be misleading, we have included the percentage that high technology and not-so-classified industries comprise of total employment for selected reference years. These percentage values can be employed to evaluate whether the high technology industries are becoming more or less important in their contribution to total employment over the period 1970 to 1990 for the U.S. and 1970 to 1985 for Minnesota.

Table 2. Comparisons of Growth Rates and Percentage of Total Payroll Employment, High Technology and Ten Fastest Growing Not-So-Classified Industries, U.S., 1970-1990. 1/

SIC Code & Industry	Percent Change 1970-81	Percent Change 1981-90	Percent of Total Employment 1970	Percent of Total Employment 1981	Percent of Total Employment 1990
High Technology					
283 Drugs	33.7	14.5	.21	.22	.21
29 Petroleum Refining	12.8	-14.9	.27	.24	.17
357 Office Computing & Acct. Equip	66.3	35.4	.41	.51	.57
361 Electric Trans. & Dist. Equip.	-14.7	14.0	.20	.13	.13
362 Electrical Industrial Appliances	10.8	27.6	.31	.26	.28
363 Household Appliances	-12.2	19.4	.26	.18	.18
364 Electric Wiring & Lighting Equip.	2.9	52.8	.28	.22	.28
366 Communications Equip.	5.3	13.2	.74	.61	.57
367 Electronic Computing Accessories	52.5	19.1	.52	.61	.61
369 Misc. Electrical Machinery & Equip.	24.3	14.1	.17	.16	.15
372 Aircraft & Parts	-2.3	7.2	.94	.71	.63
376 Guided Missiles & Space Vehicles	31.6	17.2	.13	.13	.13
381 Eng., Lab., Science & Res. Instr.	9.9	11.7	.10	.09	.08
382 Measuring & Controlling Instr.	51.0	7.8	.24	.28	.25
383 Optical Instruments & Lenses	45.1	16.4	.03	.04	.04
384 Surgical, Medical, & Dental Instr.	20.6	87.9	.12	.11	.17
385 Opthalmic Goods	16.6	22.0	.05	.05	.05
386 Photographic Equip. & Supplies	21.4	5.7	.16	.15	.13
387 Watches, Clocks, Clockwork Devices	35.1	28.9	.04	.01	.02
Ten Fastest Growing Not-So-Classified					
12 Bituminous Coal & Lignite	56.8	84.5	0.20	0.24	.37
13 Oil & Gas Extraction	154.1	-15.4	0.38	0.75	.53
47 Transportation Services	83.4	8.7	0.16	0.23	.21
58 Eating and Drinking Places	84.2	34.1	3.63	5.21	5.78
64 Insurance Agents & Brokerage Serv.	61.7	11.8	0.41	0.51	.47
67 Holiday & Other Invest. Offices	65.7*	24.2	0.10*	0.13	.14
73 Business Services	94.3	22.4	2.36	3.57	3.62
80 Health Services	81.2	62.6	4.31	6.10	8.21
81 Legal Services	125.6	12.9	0.33	0.58	.55
Total Payroll Employment	28.5	20.7	100.00	100.00	100.00

*Data for 1972 to 1981

1/ The fastest growing were based on 1970-81 experience. To have included the projected fastest growing would have made the table inordinately long. These can, however, be obtained from the author on request.

Table 3. Comparisons of Growth Rates and Percentage of Total Payroll Employment, High Technology and Ten Fastest Growing Not-So-Classified Industries, Minnesota, 1970-1985. 1/

SIC Code & Industry	Percent Change 1970-81	Percent Change 1981-85	Percent of Total Employment 1970	Percent of Total Employment 1981	Percent of Total Employment 1985
High Technology					
283 Drugs	28.1	8.7	.04	.03	.03
29 Petroleum Refining	-18.3	2.4	.08	.09	.08
357 Office Computing & Acct. Equip.	40.5	7.2	2.13	2.23	2.19
361 Electric Trans. & Dist. Equip.	- 6.2	31.4	.05	.04	.04
362 Electrical Industrial Appliances	19.0	42.9	.39	.24	.30
363 Household Appliances	10.6	8.70	.30	.25	.24
364 Electric Wiring & Lighting Equip.	91.6	6.3	.06	.09	.09
366 Communications Equip.	11.4	8.6	.23	.19	.17
367 Electronic Computing Accessories	96.9	9.5	.37	.55	.52
369 Misc. Electrical Machinery & Equip.	-18.4	20.5	.19	.12	.13
372 Aircraft & Parts	-44.7	32.6	.04	.02	.02
376 Guided Missiles & Space Vehicles	INA	INA	0	0	0
381 Eng., Lab., Science, & Res. Instr.	38.1	13.5	.31	.32	.32
382 Measuring & Controlling Instr.	24.4	3.9	.60	.56	.51
383 Optical Instruments & Lenses	-61.3	225.5	.01	.003	.001
384 Surgical, Medical, & Dental Instr.	474.3	28.5	.09	.37	.41
385 Opthalmic Goods	49.1	38.2	.11	.12	.15
386 Photographic Equip. & Supplies	36.8	8.3	.17	.17	.16
387 Watches, Clocks, Clockwork Devices	*	*	NIL	NIL	NIL
Ten Fastest Growing Not-So-Classified					
24 Lumber & Wood Products	28.9	7.5	0.63	0.61	.57
30-1 Rubber, Plastics, & Leather	56.3	13.7	0.61	0.71	.70
58 Eating & Drinking Places	96.3	14.9	4.13	6.05	6.07
59 Misc. Retail Stores	53.7	12.1	2.15	2.47	2.42
65-6 Real Estate & Services	94.3	11.2	0.66	0.96	.93
73 Business Services	120.7	19.6	1.91	3.14	3.00
75-6 Automotive & Misc. Repair	77.4	25.0	0.71	0.94	.92
78-9 Motion Pictures & Other Amusement	80.2	12.3	0.84	1.13	1.11
80 Health Services	82.7	17.3	5.41	7.38	7.57
81 Legal Services	187.9	5.8	0.25	0.54	.50
Total Payroll Employment	34.0	14.4	100.00	100.00	100.00

*Disclosure rules prohibit publication.

1/ As with the ten fastest growing not-so-classified for the U.S. the reference period was 1970-81. Projected fastest growing for Minnesota are also available from the author on request.

An inspection of Tables 2 and 3 shows that for the period 1970-81, employment in more than 50 percent of the high technology industries grew more slowly than total payroll employment in both the U.S. and Minnesota. This effect is also evidenced in the declining proportion of total employment that occurred between 1970 and 1981 for a majority of the high technology industries. This behavior was in contrast to that of the fast growing industries not classified as high technology.

For the period 1981-90, 13 out of 19 industries classified as high technology showed industry payroll employment growing more slowly than total (all-industry) payroll employment at the national level. This again is reflected in a decline in the proportion of total employment over this period for the industries classified as high technology. In the case of Minnesota, 10 out of the 19 industries classified as high technology showed industry payroll employment growing more slowly than total payroll employment for the period 1981-85. As with national high technology employment this translated into a declining share of total payroll employment for these industries.

Educational Requirements of the Future Labor Force

In tandem with the prediction of high technology as the wave of the future, we are being exposed to admonitions regarding the need to educate the labor force in sophisticated technical skills to meet the demands of a post-industrial society. 4/ These admonitions often include veiled references to hordes of unemployed workers who are unable to secure jobs because they lack the skills required of the new technology. Admittedly, the educational level of the labor force will need to grow in some areas, but to offer an alarmist spector of the future predicated on the primacy of high technology is unrealistic. Let us see why.

An evaluation of the educational requirements of the future labor force can be reasonably accomplished by examining the occupational distribution of projected employment. 5/ For the U.S., the 1990 projections of occupational employment by

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4/ Some pundits characterize the post-industrial society as an information economy in which the production of information will be a new and primary activity as distinct from goods production. Such a view ignores the fact that the development of information for decision-making has long been an important and integral function of all industrial and commercial activity. For example, in 1963, McDonough estimated that over 30 percent of manufacturing employment in the U.S. was primarily concerned with producing and processing information and that 50 percent of the costs of running our economy are information costs. See, Adrian M. McDonough, Information Economic's and Management Systems, McGraw-Hill Book Company, New York, 1963, p. 6 and 11.

5/ An alternative but more complex method would be to study the skill profile along a scale from least to most highly skilled labor to produce a unit of product or service. Such a study was done in the late 1960s by Crossman, et al, for nine industries (SIC Codes 2813, 2911, 3312, 3722, 3723, 4511, 4911, 6022 and 6025). They found while skill levels for direct-labor manhour demands were significantly higher in 2 out of the 7 subtypes of technological advance, they were only moderately significant in 3 out of 7, and were completely lacking for the remaining subtype. More importantly, they not only found skill levels for indirect-labor manhour demands generally declining, but more than offsetting those for direct-labor. See, R.F.W. Crossman, et al, The Impact of Technological Change on Manpower and Skill Demand: Case-Study Data and Policy Implications, University of California, Berkley, February, 1969.

the Bureau of Labor Statistics (BLS) were used. Our evaluation involved looking at future occupational employment in terms of: 1) rates of growth, 2) absolute amount of growth, and 3) number of annual openings. In this context, we developed three tables for analysis; one ranking the 100 fastest growing occupations by rate of growth, another ranking the 100 largest growing occupations by the numerical increase in employment, and a third table ranking the 100 largest occupations by average annual openings due to growth and replacement demand. Given this information, we proceeded to ascertain the educational requirements of these occupations using the Occupational Outlook Handbook, Dictionary of Occupational Titles, and assorted other sources including our own knowledge of educational requirements for particular occupations. This same procedure was used for Minnesota, except that the occupational employment projections are only available to 1985. Based on this procedure, future labor force educational requirements for the U.S. and Minnesota were developed. These are provided in Table 4 which follows.

Table 4. Estimated Educational Requirements for 100 Occupations Ranked by Projected Growth and Employment Opportunities, U.S. and Minnesota.

Preferred or Required Educational Level	Percentage Distribution					
	Fastest Growing		Largest Growing		Av. Annual Openings	
	U.S.	MN	U.S.	MN	U.S.	MN
High School Graduate	51	51	59	61	64	60
Trade or Vocational School	27	28	24	28	20	23
Bachelor's Deg. or Higher	22	21	17	11	16	17

The data in Table 4 makes it abundantly clear that the majority of employment opportunities in the 1980s for the 100 fastest and largest growing occupations will require only a high school education. Had we examined the educational requirements for total occupational employment, the results would have been even more heavily weighted in favor of high school graduates. Moreover, an independent study done by Levin and Rumberger has suggested that, if anything, high technology is more likely to reduce rather than increase the skill requirements for the performance of many existing tasks, thus limiting higher educational requirements to specialized positions or occupations. 6/

6/ See. Henry M. Levin and Russell W. Rumberger, "The Educational Implications of High Technology", Institute for Research on Educational Finance and Governance. Stanford University, February 1983. See, also, remarks on job growth by Ronald Kutscher, Associate Commissioner of the Bureau of Labor Statistics, before the Congressional subcommittee on high technology and robotics, as reported in The Employment and Training Reporter, Volume 14, Number 37, p1205.

In summary, it is evident that the delineation of selected industries as high technology, while a harmless exercise in some respects, can lead to poor policy formulation without careful examination. Based on our analysis, we found the heroic assumptions regarding future job growth and educational requirements of high technology to be untenable. In fact, it is possible that high technology will actually lower rather than increase the skill requirements for many tasks now being performed by our work force. In the end, as with many myths, it appears that placing too much faith in high technology can only lead to frustration and disillusionment once reality "hits the fan", so to speak. This is not to infer that our educational system and the competencies required by our work force do not require serious attention. However, the failure to properly evaluate and address this problem can easily lead to misdirected effort. As a former teacher, we are painfully aware of the problems in education, many of which do not stem from a lack of money but from a lack of clear objectives and a commitment to standards.

Brief Analysis Of Economic Conditions

THE NATIONAL AND STATE ECONOMIES IN THE FIRST QUARTER

By B. Boyle

NATION

Substantial increases in nearly all of the economic statistics in March and April indicated that the recovery that began in January is gathering momentum. Revised data showed that March was considerably stronger than was suggested by the preliminary figures. Since December the economy has shown improving health in every month except February.

Probably the most significant developments in March and April were the strong and widespread advances in industrial production and retail sales. The 2.1 percent increase in output in April followed an upward revised gain of 1.2 percent in March and was the largest since a 2.2 percent rise in August 1975. Retail sales rose a solid 1.6 percent in April after a sharply upward revised increase of 1.7 percent in March. The substantial gains in sales in March and April came after three consecutive monthly declines. Also encouraging in April was an increase of 258,000 in nonfarm payroll employment. Almost one third of the December to April gain of 650,000 in payroll employment was in the cyclically sensitive durable goods manufacturing industries. Moreover, personal income rose 0.8 percent in April, the steepest rise since July 1982. Even more important was that the income gain was primarily in the wage and salary component.

Present conditions suggest that the recovery will continue and become even stronger. The increases in new orders and the low level of inventories should result in greater production and higher employment. Also, the strength in income is likely to bolster consumer spending. Meanwhile, the index of leading indicators rose for the tenth consecutive month in May, implying that the upturn is gaining strenth.

STATE

Although some of the indicators of business activity were very encouraging in the first quarter, most of the labor force and payroll data suggest that the economy was rather flat in the first quarter. Unemployment was still quite high even with a sharp drop in April and seasonally adjusted nonfarm payroll employment has yet to show much growth after appearing to end its long decline in December.

Even though the April decline of 1.2 percentage points (largely due to less than normal growth in the labor force) in the State's seasonally unadjusted unemployment rate equalled a record, the rate, at 9.0 percent, was the third highest rate since labor force data has been available. Also, seasonally unadjusted total employment which, on average, rises by 1.8 percent between December and April fell 0.9 percent over the past four months. This decline was the largest since a drop of 1.3 percent between December 1974 and April 1975. Since December 1982, seasonally adjusted nonfarm payroll employment has risen by 4,500 or 0.3 percent. After a gain of 6,800 in December, revised data show that payroll employment has been edging downward. Declines since January in construction, public utilities, and government have offset gains in manufacturing, trade, and services.

On the other hand, other indicators have shown considerable improvement in the past year. Private housing permits in the first quarter were more than double the level of the same period in 1982. Also, retail sales have risen by 12 percent since last July. If the housing industry and business activity in general continues to strengthen, we should begin to see faster gains in employment in the months ahead.

Forecasts

FORECASTS OF GNP AND MINNESOTA PAYROLL EMPLOYMENT

By C. Cline

The table below presents forecasted values for the next eight quarters, together with the most recent quarterly estimates, for real Gross National Product and selected Minnesota nonagricultural wage and salary employment levels. These forecasts are produced using the Vector Autoregression model developed for Research by Rao Aiyagari.

The data shown below present forecasts of price adjusted, or real, GNP and total and major industry division nonagricultural wage and salary employment. The period covered is the second quarter of 1983 through the first quarter of 1985.

The model forecasts a 7.7 percent expansion in real GNP for 1983 and 7.6 percent for 1984. We regard these to be optimistic in the light of rates of real growth during previous economic expansions. In the three most recent expansions the annual rates of real growth ranged from 2.6 to 6.0, 3.4 to 5.8 and 2.8 to 5.5 percent. In only one post-war expansion was real growth greater than our forecast. That was in 1950 (8.7 percent) and 1951 (8.3 percent).

Total Minnesota wage and salary employment has suffered falling over-the-year levels since attaining its high of 1803.076 thousand in the Winter Quarter of 1979. Our forecasts show growth in the level of total payroll employment on an over-the-year basis beginning with the fourth quarter of 1983 although the level is beginning to firm up now. Again we believe our forecasts to be optimistic, but even so we do not expect employment to reach its high of 1979 until late in 1984.

Quarter	Real GNP (Billions of 1972 Dollars)	MINNESOTA PAYROLL EMPLOYMENT, BY QUARTER (In Thousands)								
		Total Nonagricultural Wage & Salary	Mining	Contract Construction	Manufacturing	Transportation, Communications, & Public Utilities	Retail and Wholesale Trade	Finance, Insurance, & Real Estate	Services	Government
CURRENT										
1983-I	1486.20	1652.42	7.75	44.44	330.17	92.96	413.32	97.28	377.40	289.90
FORECAST										
1983-II	1507.61	1691.48	10.10	55.11	330.19	92.67	432.18	99.12	390.22	290.91
1983-III	1534.20	1698.09	11.22	65.12	340.13	91.74	432.35	100.23	394.05	266.10
1983-IV	1566.36	1724.14	11.33	62.90	333.61	95.23	436.49	99.91	398.56	287.37
1984-I	1600.24	1695.30	11.04	48.37	331.49	93.52	427.13	100.21	396.20	288.98
1984-II	1634.24	1762.40	12.59	61.25	340.93	95.18	450.13	102.56	412.36	290.15
1984-III	1667.69	1794.57	12.85	73.63	360.76	96.08	453.49	104.28	418.07	267.89
1984-IV	1698.41	1837.02	12.22	71.54	360.70	100.31	462.69	104.34	425.89	288.65
1985-I	1727.11	1811.20	11.45	54.92	361.71	98.62	455.51	104.83	424.68	291.37

Notes

1. The concept of employment forecasted is that of Nonagricultural Wage and Salary employment. The count represents the number of jobs held since the data is generated from a survey of employer payroll records. Groups included in labor force employment, but excluded here are the self employed, domestics, unpaid family workers, employees of nonprofit institutions, and those government workers not covered by unemployment insurance.
2. Employment forecasts are seasonally unadjusted values. Real GNP is seasonally adjusted.
3. Forecasts of major industry employment do not sum to the forecast of total wage and salary employment. This is due to random error in the forecasted values.
4. There is great diversity in the accuracy of our forecasts among the major industry division. More information on their accuracy can be obtained from the author on request.

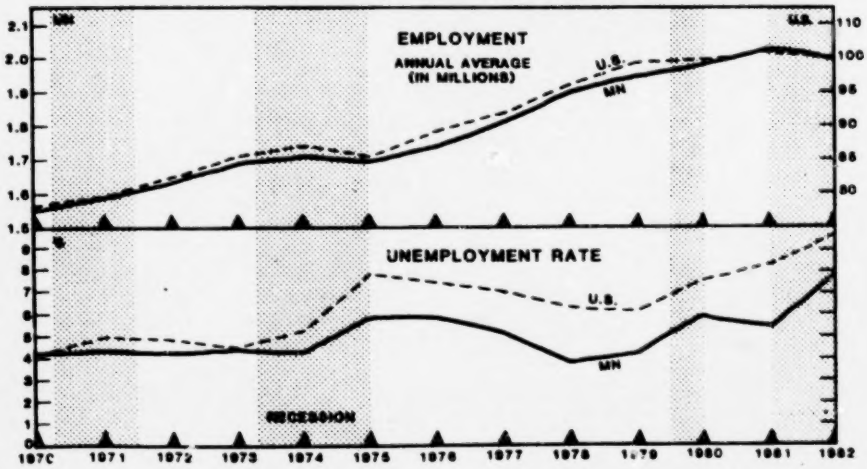
Labor Force Statistics

Labor Force Estimates	MINNESOTA (Numbers in '000's)			UNITED STATES (Numbers in '000,000's)		
	April 1983	Change From Last Mo.	Change From Year Ago	April 1983	Change From Last Mo.	Change From Year Ago
Civilian Labor Force	2117.2	26.7	-51.3	109.9	0.0	1.1
Employed	1926.0	48.5	-73.7	98.8	0.8	0.0
Unemployed	191.2	-21.8	22.4	11.1	-0.8	1.1
Unemployment Rate						
Actual	9.0	-1.2	1.2	10.0	-0.8	0.8
Seasonally Adjusted	n.a	n.a	n.a	10.2	-0.1	0.8

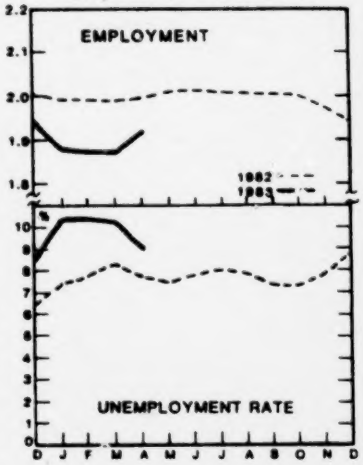
Historical Labor Force Series

Year	Minnesota (Annual Average in '000's)				United States (Annual Average in '000,000's)			
	Labor Force	Employment	Unemployment Number	Unemployment Rate	Labor Force	Employment	Unemployment Number	Unemployment Rate
1970	1625.0	1557.0	68.0	4.2	82.8	78.7	4.1	4.9
1971	1665.0	1593.0	73.0	4.4	84.4	79.4	5.0	5.9
1972	1709.0	1635.0	73.0	4.3	87.0	82.2	4.9	5.6
1973	1774.0	1694.0	80.0	4.5	89.4	85.1	4.4	4.9
1974	1779.0	1701.0	77.0	4.3	91.9	86.8	5.2	5.6
1975	1804.0	1697.0	107.0	5.9	93.8	85.8	7.9	8.5
1976	1849.0	1739.0	109.0	5.9	96.2	88.8	7.4	7.7
1977	1907.0	1809.0	97.0	5.1	99.0	92.0	7.0	7.1
1978	1979.0	1903.0	75.0	3.8	102.3	96.0	6.2	6.1
1979	2038.0	1953.0	85.0	4.2	105.0	98.8	6.1	5.8
1980	2109.0	1984.0	125.0	5.9	106.9	99.3	7.6	7.1
1981	2153.0	2034.0	119.0	5.5	108.7	100.4	8.3	7.6
1982	2166.0	1997.0	169.0	7.8	110.2	99.5	10.7	9.7

MN and the U.S., Employment & Unemployment Rate



MN, 1982 and 1983



Labor Market Conditions

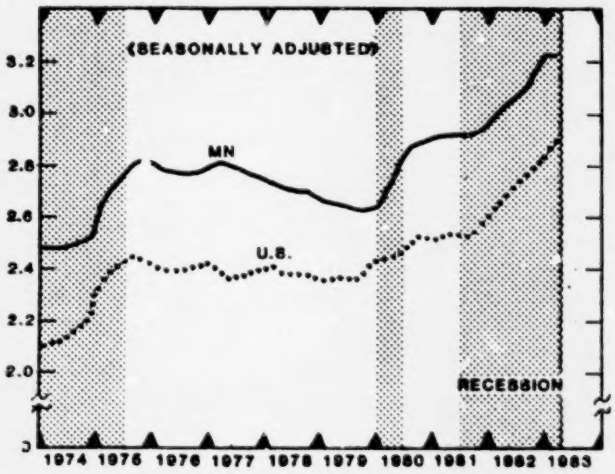
The table and graphs in this section describe the behavior of the market for labor services in terms of its quantity, price, and supply. The quantity of labor services, which is the number of employed persons, is classified by industry. The price of labor services is roughly indicated by the industry wage. Unemployment estimates provide a qualified measure of excess labor supply. The degree to which persons participate in the labor market and the effectiveness of the market in utilizing labor services are indicated by Labor Force Estimates and by Other Rates of Labor Utilization.

Labor Force And Establishment Data	MINNESOTA (Numbers in '000's)			UNITED STATES (Numbers in '000's)		
	I Qtr. 1983	Percent Change From		I Qtr. 1983	Percent Change From	
		Last Qtr	Year Ago		Last Qtr	Year Ago
LABOR FORCE ESTIMATES						
Total Labor Force	2096.1	-2.3	-0.8	109767	-0.8	1.3
Employment	1880.4	-4.8	-3.5	97507	-1.9	-0.6
Nonagriculatural*	n.a	n.a	n.a	94588	-1.5	-0.6
Agriculatural*	n.a	n.a	n.a	2919	-12.3	0.7
Unemployment	215.7	25.8	30.6	12260	8.0	19.2
By Reason - New Reentrants-%*	n.a	n.a	n.a	32.5	2.5	-5.8
By Reason - Quit-%*	n.a	n.a	n.a	7.6	11.8	-18.3
By Reason - Lost-%*	n.a	n.a	n.a	59.9	-2.6	6.6
Unemployment Rates						
Actual	10.3	28.8	32.1	11.2	8.7	17.9
Seasonally Adjusted	n.a	n.a	n.a	10.3	-3.7	17.0
OTHER RATES OF LABOR UTILIZATION						
Participation Rt (Labor Force/Population 16+)*	n.a	n.a	n.a	63.7	-0.6	0.0
Full Employment Deficit - Percent of Workers1/	6.3	4.0	3.8	7.2	6.3	5.5
Manpower Utilization Rate2/*	81.2	0.9	-1.0	79.1	0.6	-1.6
NONAGRICULTURAL WAGE AND SALARIED POSITIONS						
Employment*	1686.2	-0.1	-2.8	38836	0.1	-1.7
Mining	8.2	22.4	-37.9	1009	-3.6	-15.9
Construction	56.0	-2.3	-10.4	3828	-0.4	-3.3
Manufacturing	336.1	-0.1	-5.7	13232	0.1	-6.2
Durables	197.9	-0.3	-7.3	10606	0.3	-8.3
Nondurables	138.2	0.3	-3.2	7626	-0.1	-3.1
Trans., Comm., & Public Utilities	93.5	-0.6	-3.3	4940	-1.1	-3.4
Trade	425.6	-0.1	-1.8	20466	0.4	-0.9
Fin., Ins., & Real Estate	98.1	0.1	-0.3	5399	0.6	1.3
Services	383.7	0.6	1.0	19232	0.6	1.9
Government	285.0	-0.7	-2.9	15730.	-0.2	-0.8
Average Weekly Hours*						
Mining	35.5	-3.7	-4.6	41.6	-0.7	-4.1
Construction	36.8	5.1	0.3	36.2	-1.4	2.3
Manufacturing	39.5	0.8	0.8	39.5	1.5	1.1
Durables	40.2	0.8	1.5	39.9	2.0	1.8
Nondurables	38.7	1.3	0.0	38.9	1.0	2.1
Trans., Comm., & Public Utilities	38.2	1.1	-2.3	38.4	-1.5	-1.3
Trade	29.8	0.3	0.7	31.8	-0.3	-0.3
Fin., Ins., & Real Estate	n.a	n.a	n.a	36.1	-0.3	-0.3
Services	n.a	n.a	n.a	32.7	0.3	0.3
Average Hourly Wage						
Mining	13.33	1.4	0.0	11.25	1.8	5.8
Construction	14.91	3.5	6.5	11.90	1.0	4.3
Manufacturing	9.48	1.9	5.9	8.73	1.3	4.2
Durables	9.46	1.3	5.8	9.29	1.2	4.3
Nondurables	9.51	3.0	6.1	7.99	1.4	5.3
Trans., Comm., & Public Utilities	10.58	0.3	5.7	10.67	1.0	5.6
Trade	7.26	3.4	7.7	6.44	2.2	4.5
Fin., Ins., & Real Estate	n.a	n.a	n.a	7.23	3.3	9.7
Services	n.a	n.a	n.a	7.18	1.4	5.9
Estimates of Labor Turnover (Mfg. Only)	Estimates of Labor Turnover have been discontinued as of January 1, 1982.					

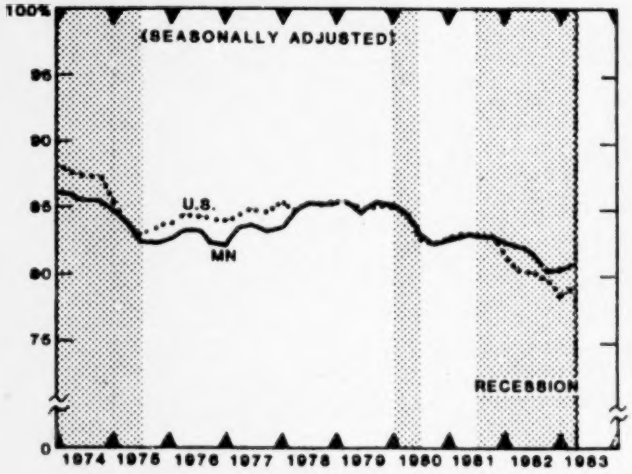
a/ Values are numerical values, not percent changes.

Labor Market Conditions

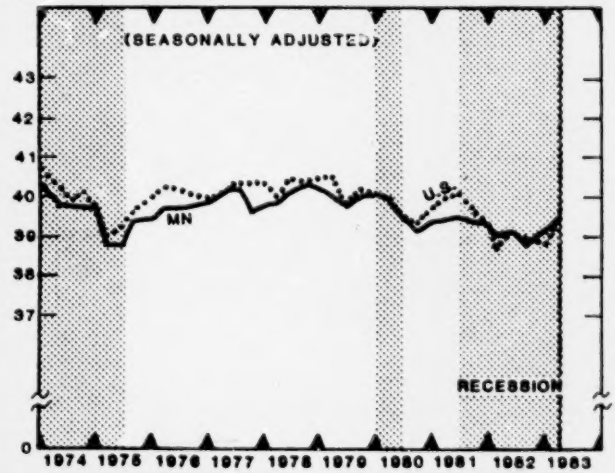
Ratio of Service to Goods Producing Jobs



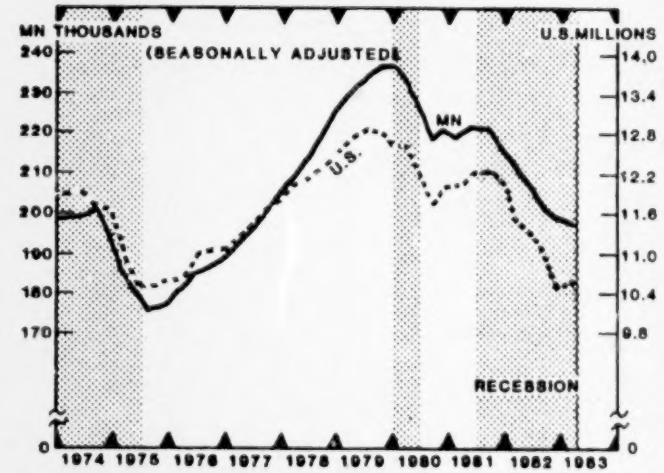
Manpower Utilization Rate



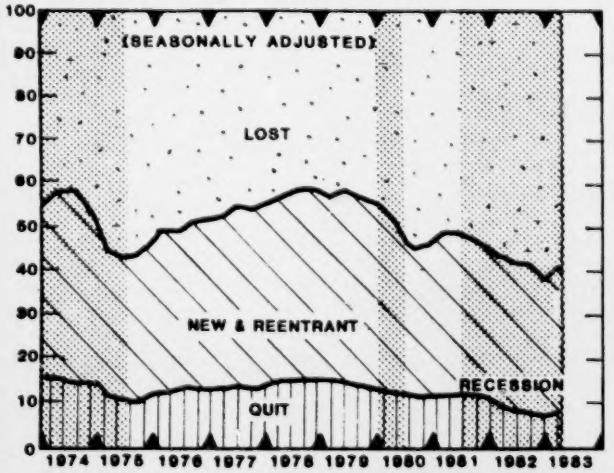
Average Weekly Hours, Manufacturing



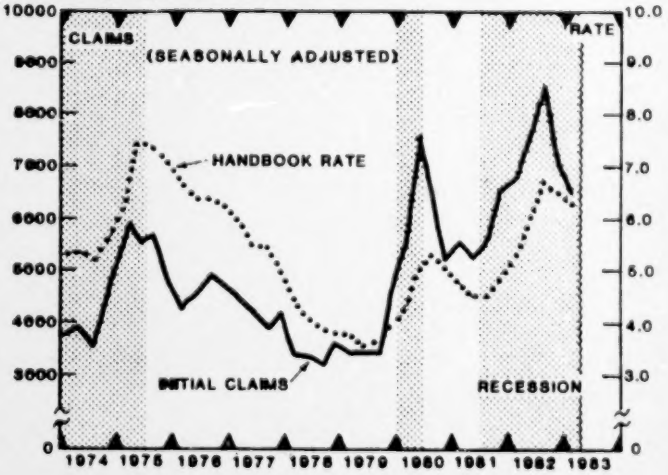
Manufacturing Employment, Durable Goods



U.S. Unemployment: Percent Distribution by Reason



MN Weekly Initial Claims & Handbook Unemployment Rate [1]



Labor Market Conditions

The Table below provides data on persons who file claims for unemployment compensation in Minnesota. Only those claiming benefits from the regular State program are represented, since data on the characteristics of Federal employees and veterans are not available, and data on those receiving benefits from extended programs is reported only when those programs are in effect. If those receiving extended benefits were included they would distort the numerical comparisons over time, but would not substantially change the percentage distributions other than to increase the proportion of long-term unemployed.

Persons Claiming Benefits	First Quarter 1983			April 1983			Percent Long Term
	Number	Percent Change From		Number	Percent Change From		
		Last Qtr.	Year Ago		Month Ago	Year Ago	
By Age & Sex							
Male	62244	38.8	4.6	46227	-22.2	-15.0	34.7
Under 45	48712	39.3	1.9	36026	-22.8	-17.0	34.4
Under 25	13661	47.1	-19.5	9221	-28.3	-36.2	36.9
25-34	23725	37.6	10.8	18199	-20.9	-9.1	33.8
35-44	11326	34.4	20.5	8606	-20.2	-3.4	32.8
45 and Over	13532	36.9	15.6	10201	-20.2	-7.0	35.9
45-54	7716	36.6	13.4	5676	-21.5	-10.2	34.6
55 and Over	5816	37.4	18.8	4525	-18.5	-2.6	37.4
Female	19782	9.5	10.1	15543	-16.3	-13.8	32.0
Under 45	14604	6.7	7.4	11432	-16.3	-16.6	31.6
Under 25	4352	13.5	-3.2	3064	-23.6	-30.8	32.2
25-34	6323	4.6	11.7	5119	-13.9	-10.2	31.5
35-44	3929	3.3	14.3	3249	-12.5	-9.2	31.4
45 and Over	5178	17.9	18.2	4111	-16.1	-5.1	33.0
45-54	2866	14.1	14.4	2287	-16.2	-7.9	31.4
55 and Over	2312	23.0	23.4	1824	-15.9	-1.2	35.0
By Industry	82026	30.4	5.9	61770	-20.8	-14.7	34.0
Ag., For., Fish.	2208	107.9	12.6	1253	-38.6	-1.4	52.6
Mining	4451	-35.3	16.8	2132	-39.8	-51.2	32.9
Construction	21947	123.3	-5.2	16603	-23.8	-12.8	37.2
Manufacturing	22812	12.9	5.8	16878	-19.0	-23.7	33.6
Pub. Utilities	3509	66.4	6.5	3065	-12.1	-10.4	27.8
Wholesale Trade	5357	31.0	21.3	4300	-16.0	-1.4	37.4
Retail Trade	8634	42.3	17.1	7153	-18.4	0.3	30.1
Fin., Ins., Real Est.	1474	14.5	17.5	1244	-12.3	-9.6	38.2
Services	9375	-1.9	13.3	7278	-17.6	-6.4	30.6
Public Admin.	1466	24.2	-17.1	912	-31.1	-25.0	34.7
Inf. Not Available	793	21.6	36.7	952	13.7	208.1	9.7
By Occupation	82026	30.4	5.9	61770	-20.8	-14.7	34.0
Prof., Tech., Mgr.	7451	-6.8	30.6	6154	-13.3	4.9	33.3
Clerical	6581	4.1	15.2	5495	-12.5	-5.9	31.9
Sales	2570	29.3	18.9	2186	-16.3	1.1	30.9
Services	4983	18.3	19.7	3799	-20.2	-3.2	33.0
Farm., For., Fish.	1796	89.9	6.5	993	-40.5	-8.8	49.9
Processing	3633	58.7	-3.4	2685	-28.2	-36.6	28.4
Machine Trade	5445	6.2	16.4	4077	-19.0	-15.8	31.9
Benchwork	7250	-0.1	-1.1	4942	-23.0	-32.4	36.6
Structural Work	25372	96.6	-5.1	18697	-24.0	-15.2	36.4
Misc.	16686	21.9	8.7	12033	-22.5	-19.1	32.2
Inf. Not Available	259	34.2	38.5	709	165.5	254.5	34.5
By Duration	82026	30.4	5.9	61770	-20.8	-14.7	
0-14 Weeks	64907	43.7	1.5	40765	-30.0	-16.2	
15+ Weeks (Long-Term)	17119	-3.6	26.8	21005	6.1	-11.6	

Labor Market Conditions

Minnesota Nonagricultural Wage & Salary Employment, Hours, and Earnings

INDUSTRY	EMPLOYMENT[1] (thousands)			PER CENT CHANGE FROM		PRODUCTION WORKERS' HOURS & EARNINGS					
						Average Weekly Earnings		Average Hourly Earnings		Average Weekly Hours	
	April 1983	March 1983	April 1982	March 1982	April 1982	April 1983	March 1983	April 1983	March 1983	April 1983	March 1983
TOTAL NONAGRICULTURAL	1675.3	1656.6	1711.3	1.1	-2.1						
MANUFACTURING	331.7	331.2	345.9	0.2	-4.1	366.31	375.25	9.49	9.50	38.6	39.5
Durable Goods	197.4	196.9	208.6	0.3	-5.4	368.16	382.59	9.44	9.47	39.0	40.4
Furniture, Lumber and Wood	13.4	13.3	12.1	0.9	11.2	382.39	398.19	10.17	10.21	37.6	39.0
Stone, Clay and Glass	7.7	7.3	7.5	6.2	3.0	363.44	359.28	9.44	9.43	38.5	38.1
Primary Metals	4.7	4.6	5.8	2.1	-17.7	336.49	346.58	8.65	8.73	38.9	39.7
Fabricated Metals	32.3	32.2	34.0	0.2	-5.0	412.09	423.91	10.38	10.39	39.7	40.8
Nonelectrical Machinery	75.8	76.4	84.5	-0.8	-10.4	374.99	388.17	9.74	9.68	38.5	40.1
Electrical Machinery	26.2	25.8	25.9	1.3	0.9	325.20	345.20	8.36	8.44	38.9	40.9
Transportation Equipment	5.9	5.9	5.8	0.4	0.7	369.63	414.12	9.78	10.20	37.8	40.6
Other Durable Goods [2]	31.4	31.4	33.0	0.1	-4.8	352.97	357.66	8.63	8.66	40.9	41.3
Nondurable Goods	134.3	134.3	137.3	0	-2.2	363.28	365.38	9.56	9.54	38.0	38.3
Food and Kindred	42.5	42.8	43.1	-0.7	-1.5	337.50	336.75	9.00	8.98	37.5	37.5
Textile and Apparel	4.5	4.4	5.5	2.4	-17.0	219.36	225.54	6.34	6.30	34.6	35.8
Paper and Allied	31.8	31.7	32.7	0.4	-2.6	446.40	446.83	10.43	10.44	42.8	42.8
Printing and Publishing	35.3	35.3	35.4	-0.1	-0.3	351.92	363.26	10.29	10.32	34.2	35.2
Chemical and Petroleum	9.1	9.1	9.1	-0.1	0.1	420.89	398.73	10.47	10.12	40.2	39.4
Rubber and Leather	11.1	11.1	11.6	0.3	-4.1	295.09	305.31	7.89	7.93	37.4	38.5
NONMANUFACTURING	1343.6	1325.4	1365.4	1.4	-1.6						
Mining and Quarrying	8.4	7.8	11.7	8.1	-28.5	403.75	423.50	11.91	12.10	33.9	35.0
Metal Mining	6.0	6.5	10.3	5.6	-33.6	420.00	437.67	12.50	12.76	33.6	34.3
Construction	48.0	44.0	53.2	10.9	-8.2	481.13	533.57	14.76	15.03	32.6	35.5
Building	13.5	12.1	15.5	11.3	-12.8	439.21	509.40	13.64	13.88	32.2	36.7
Highway and Heavy	6.2	4.3	6.2	45.2	-0.2	391.87	434.19	12.17	12.37	32.2	35.1
Special Trades	29.1	27.6	31.4	5.5	-7.4	522.45	561.40	15.88	16.04	32.9	35.0
Transportation	60.1	59.6	60.7	0.8	-1.0						
Railroads	12.9	13.0	13.7	-0.8	-5.8	507.65	507.65	11.06	11.06	45.9	45.9
Trucking and Warehousing	22.7	22.2	22.8	2.2	-0.5	424.70	428.15	11.83	11.86	35.9	36.1
Public Utilities	32.4	32.7	34.0	-0.9	-4.7	477.06	471.47	12.17	12.12	39.2	38.9
Communications	18.4	18.8	19.8	-1.6	-7.0	431.62	432.00	11.24	11.25	38.4	38.4
Elec., Gas and Sanitary	14.0	14.0	14.2	0.2	-1.4	527.32	516.27	13.15	13.07	40.1	39.5
Trade	421.5	414.2	428.4	1.8	-1.6	211.56	213.44	7.27	7.26	29.1	29.4
Retail	312.9	305.9	314.7	2.3	-0.6	167.94	168.84	6.29	6.30	26.7	26.8
General Merchandise	42.7	42.3	44.2	0.9	-3.5	159.13	161.70	5.96	5.88	26.7	27.5
Food Stores	44.5	43.7	44.2	1.7	0.7	205.34	207.94	7.44	7.48	27.6	27.8
Automotive	33.3	32.8	33.8	1.6	-1.5	254.88	249.40	7.20	7.25	35.4	34.4
Eating and Drinking	105.9	101.5	105.4	4.4	0.5	98.07	98.33	4.67	4.66	21.0	21.1
Wholesale	108.6	108.3	113.7	0.2	-4.5	364.56	364.42	9.67	9.59	37.7	38.0
F.I.R.E.	98.1	97.4	98.2	0.7	-0.1						
Finance	46.7	46.4	45.9	0.5	1.7						
Insurance	35.2	35.3	35.8	-0.4	-1.6						
Real Estate	16.2	15.7	16.5	3.5	-1.5						
Service Industries	384.3	379.1	380.1	1.4	1.1						
Hotel and Lodging	19.7	19.1	19.4	3.1	1.5						
Business Services	56.9	56.0	55.7	1.7	2.2						
Health Services	134.4	134.0	131.4	0.3	2.2						
Private Education	24.4	24.4	24.2	-0.2	0.8						
Soc. Serv., Museums etc.	81.6	81.0	82.2	0.8	-0.7						
Government	289.9	290.5	299.0	-0.2	-3.1						
Federal	29.7	29.3	30.1	-0.3	-1.0						
State	73.6	73.4	73.1	0.2	0.6						
Local	186.6	187.3	195.9	-0.4	-4.7						

[1] Totals may not add because of rounding.
[2] Includes Scientific Instruments and Miscellaneous Industries.

Labor Market Conditions

Labor Force Data: State, SMSAs, and Counties

Area or County	April, 1983 Prelim.		
	Labor Force[1]	Unemp.	Un. Rate
State of Minnesota	2117242	191230	9.0
Metropolitan Areas			
Duluth/Superior (Duluth City Only)	36747	5817	15.8
Fargo/Moorhead (Clay County, MN Only)	27282	2182	8.0
Minneapolis/St. Paul SMSA[2]	1139364	82728	7.3
Rochester SMSA (Olmsted Co.)	57652	3382	5.9
St. Cloud SMSA[3]	76826	8168	10.6
Counties			
Aitkin	5390	1182	21.9
Anoka	109327	9298	8.5
Becker	12196	1801	14.8
Beltrami	15869	1632	10.3
Benton	11809	1217	10.3
Big Stone	3921	332	8.5
Blue Earth	28899	2065	7.1
Brown	15311	1302	8.5
Carlton	11808	1668	14.1
Carver	20496	1589	7.8
Cass	10092	1417	14.0
Chippewa	7175	714	10.0
Chisago	14602	1477	10.1
Clay	27282	2182	8.0
Clearwater	4068	896	22.0
Cook	2156	395	18.3
Cottonwood	7464	595	8.0
Crow Wing	16589	2233	13.5
Dakota	106561	7495	7.0
Dodge	8164	841	10.3
Douglas	13216	1206	9.1
Faribault	11052	1113	10.1
Fillmore	12255	1137	9.3
Freeborn	17721	1567	8.8
Goodhue	19187	1564	8.2
Grant	3532	289	8.2
Hennepin	516183	35727	6.9
Houston	9711	774	8.0
Hubbard	5347	847	15.8
Isanti	10026	1186	11.8
Itasca	18317	3499	19.1
Jackson	7702	397	5.2
Kanabec	5458	777	14.2
Kandiyohi	17820	1629	9.1
Kittson	3285	304	9.3
Koochiching	7438	1098	14.8
Lac qui Parle	5807	349	6.0
Lake	4524	995	22.0
Lake of the Woods	1812	203	11.2
Le Sueur	11836	1472	12.4
Lincoln	3839	320	8.3
Lyon	14604	1235	8.5
McLeod	16510	1597	9.7
Mahnomen	2842	353	12.4
Marshall	6406	1014	15.8
Martin	13750	1113	8.1
Meeker	10922	1448	13.3
Mille Lacs	8709	1080	12.4
Morrison	12720	1617	12.7
Mower	17834	1496	8.4
Murray	6110	604	9.9
Nicollet	14801	988	6.7
Nobles	11750	737	6.3
Norman	4583	376	8.2
Olmsted	57652	3382	5.9
Otter Tail	23967	2626	11.0
Pennington	6317	714	11.3
Pine	9653	1352	14.0
Pipestone	5529	310	5.6
Polk	15936	1958	12.3
Pope	5580	495	8.9
Ramsey	251880	17226	6.8
Red Lake	2289	406	17.7
Redwood	10855	773	7.1
Renville	11408	1165	10.2
Rice	23300	2219	9.5
Rock	5584	244	4.4
Roseau	5479	695	12.7
St. Louis (Inc. Duluth)	93549	19490	20.8
Scott	24594	2249	9.1
Sherburne	14247	1669	11.7
Sibley	8458	811	9.6
Stearns	50770	5282	10.4
Steele	16276	1403	8.6
Stevens	5775	394	6.8
Swift	6413	614	9.6
Todd	11567	1069	9.2
Traverse	2867	238	8.3
Wabasha	9396	928	9.9
Wadena	5427	659	12.1
Waseca	8894	788	8.9
Washington	62155	4193	6.7
Watonwan	6705	629	9.4
Wilkin	4413	421	9.5
Winona	22111	2308	10.4
Wright	33566	3474	10.3
Yellow Medicine	7842	604	7.7

Technical Notes:

1/ Labor force data is computed according to BLS methodology. The method includes an adjustment to assure that the sum of the substate areas equals the separately estimated State total. This adjustment is Applied to all county and SMSA areas. County and area unemployment was multiplied by an adjustment factor of 1.50 ; employment was multiplied by 1.00. For a more detailed explanation see the Review of Labor and Economic Conditions, Vol. 4, No. 4, (February 1978 issue), p. 29.

2/ Anoka, Carver, Chisago, Dakota, Hennepin, Ramsey, Scott, Washington, and Wright Counties.

3/ Benton, Sherburne, and Stearns Counties.

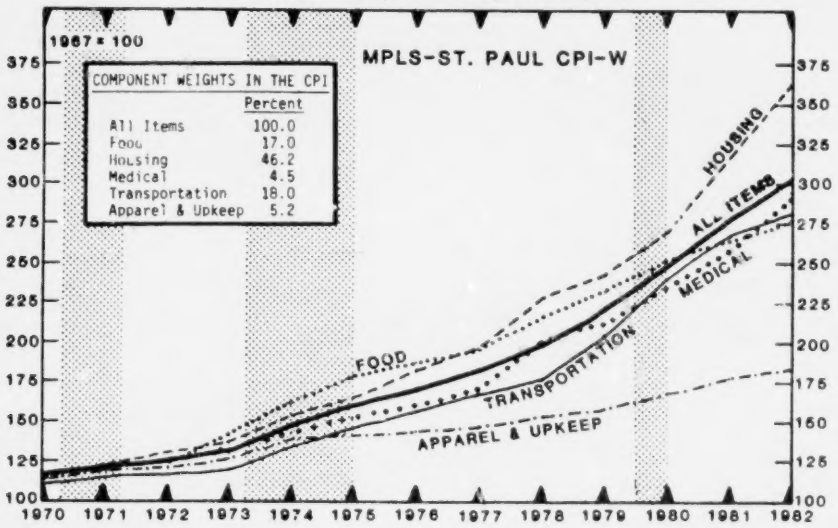
Income & Purchasing Power

This section describes how Minnesotans fare with respect to their ability to acquire goods and services needed to meet their needs and wants and how they compare with others in the United States in this respect. Real Per Capita Personal Income measures money income received by all individuals from wages and salaries, dividends, rent, professional and farm income, personal interest payments, and transfer payments, less personal contributions for social security, all adjusted for the price level as indicated by the CPI and for population. The Consumer Price Index (CPI) measures changes in the price of a representative combination of goods and services consumed by urban wage and salary workers relative to 1967. The inverse of the CPI (1/CPI) indicates the value of the dollar; when the CPI increases the value of the dollar falls. The change in the CPI over any period of time divided by the value at the beginning of the period gives the percentage change, or the rate of inflation.

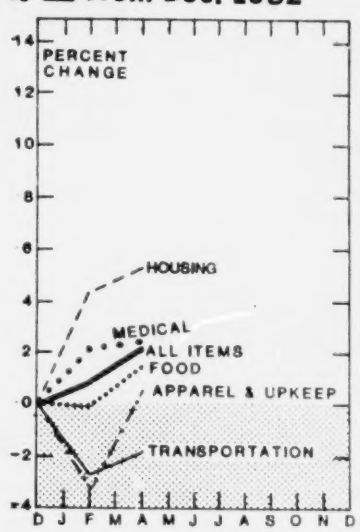
Income And Purchasing Power	MINNESOTA			UNITED STATES		
	I Qtr. 1983	Percent Change from Last Qtr.	Percent Change from Year Ago	I Qtr. 1983	Percent Change from Last Qtr.	Percent Change from Year Ago
INCOME STATISTICS						
Personal Income 1/*						
Total Personal Income (in Billions)	48.4	1.7	4.8	2648.3	0.9	5.5
Due to Labor 2/	n.a	n.a	n.a	1758.4	107.0	49.1
Due to Property 3/	n.a	n.a	n.a	611.1	19.8	25.6
Due to Transfer Payments 4/	n.a	n.a	n.a	395.3	-10.7	29.5
Total Disposable Personal Income	n.a	n.a	n.a	2247.0	1.0	6.1
As Percent of Total Pers. Inc.	n.a	n.a	n.a	84.8	0.0	0.6
Per Capita Personal Income 5/						
Current dollar Value	11658	1.7	4.2	11345	0.7	4.5
Real (1967) Dollar Value	3772	0.9	2.3	3879	0.9	0.9
Real Median Family Money Income 5/*						
All Families	8742	0.8	2.1	8670	0.8	0.7
Four Person Families	9082	0.7	1.9	10102	0.9	0.8
Earnings of Production Workers in Mfg. 6/						
Average Weekly Earnings	374.78	2.3	6.9	342.35	1.0	6.3
Real Average Weekly Earnings 7/	121.25	1.6	5.0	117.04	1.1	2.6
Income Related Criteria 8/						
Standard Budgets	The U.S. Department of Labor, Bureau of Labor Statistics has discontinued the preparation of Standard Budgets, therefore, this data is no longer available.					
Low						
Moderate						
High						
Poverty Level Income						
Urban Family of Four	9300		10.1	9300		10.1
Nonurban Family of Four	7910		10.0	7910		10.0
MEASURES OF PRICE CHANGE AND INFLATION						
Consumer Price Level (CPI) 9/	309.1	0.7	1.8	292.5	-0.1	3.5
Food	291.7	0.1	3.9	289.5	0.9	2.5
Housing	368.1	2.0	0.1	317.9	-0.4	3.8
Transportation	276.0	-2.1	0.7	291.3	-1.9	0.7
Medical	308.8	2.5	11.0	348.1	2.6	10.6
Purchasing Power of the Dollar (1/CPI)	.32	-0.6	-1.5	.34	0.1	-3.4
Wholesale Price Index	n.a	n.a	n.a	300.6	0.1	0.3
Industrial Commodities	n.a	n.a	n.a	313.9	-0.3	0.8

Income & Purchasing Power

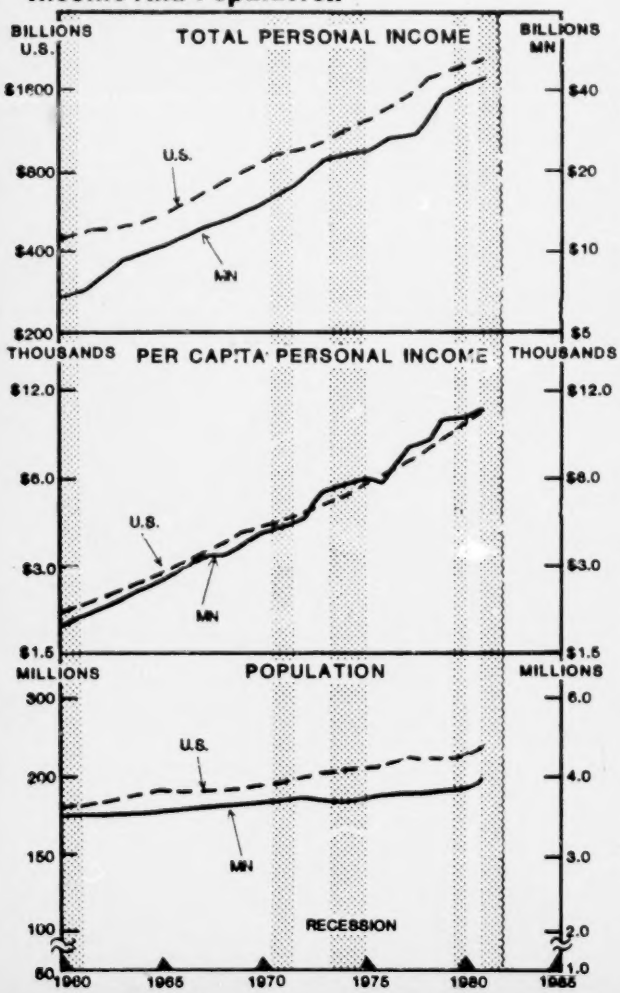
Consumer Price Index- Major Components



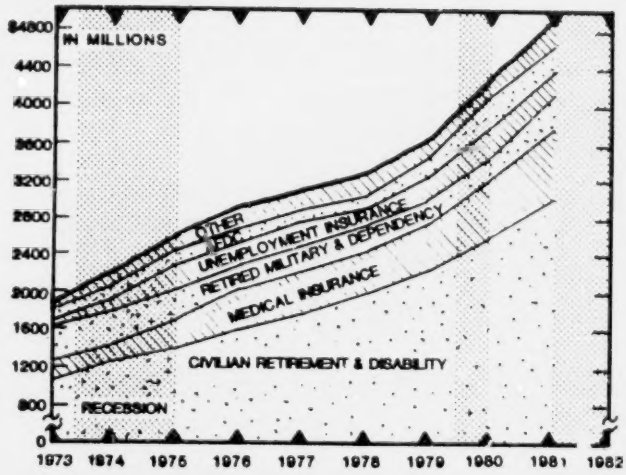
% △ From Dec. 1982



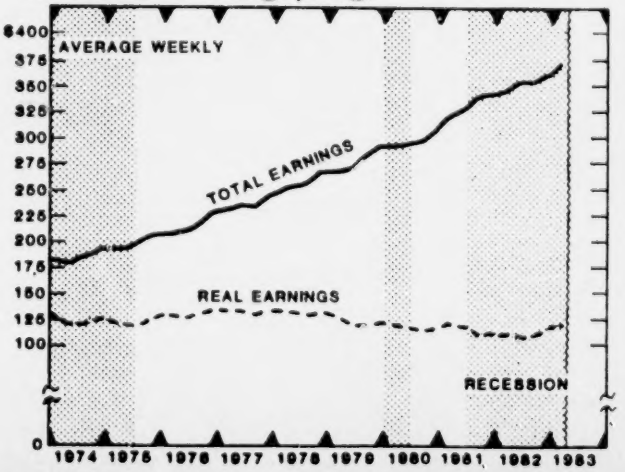
U.S. & MN Personal Income And Population



Government Transfer Payments To Individuals In Minnesota



Minnesota Earnings, Mfg.



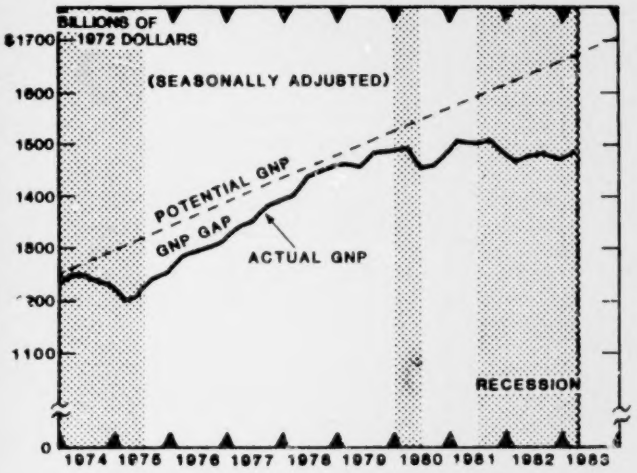
Output, Expenditures, Money, & Credit Conditions

The overall level and composition of National Output shape labor market conditions, and nominal and real earnings. (Nominal values are not adjusted for inflation; real values are adjusted for inflation.) Personal Consumption Expenditures, especially on Durable Goods, together with data on Retail Sales, are frequently used as indicators of future levels of employment. The number of Building Permits influences the level of employment in construction and related industries. The Federal Budget Deficit is a key indicator of the stimulatory effect of government policy. Whether this effect results in inflation, improved employment conditions, or some combination of the two, depends in part, upon the degree to which present productive capacity is utilized. Present and anticipated Money and Credit Conditions determine the ability of consumers, business, and State and Local governments to borrow in order to finance purchases, which, in turn, generate income and employment. Unfortunately, most data of this kind is available only for the Nation. However, in an economy as interdependent as ours, analysis of the directions of change of key national indicators is a useful tool for understanding the course of the State economy.

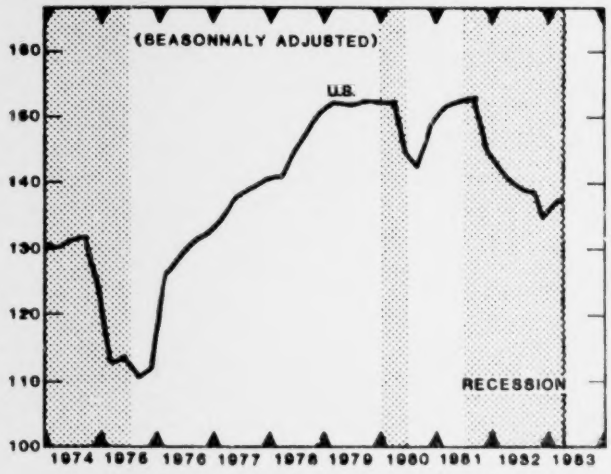
Output, Expenditure, Money, And Credit Conditions	MINNESOTA			UNITED STATES		
	I Qtr. 1983	Percent Change from		I Qtr. 1983	Percent Change from	
		Last Qtr.	Year Ago		Last Qtr.	Year Ago
OUTPUT AND EXPENDITURE						
Retail Sales (in millions of dollars)*	1785	2.1	6.8	91669	-0.3	4.8
Private Housing Units Authorized by* Building Permits 1/	28380	43.7	112.6	1477	20.8	81.2
Index of Industrial Production 2/*	n.a	n.a	n.a	138.0	2.0	-2.7
Gross National Product (in billions of 1972 dollars)* 3/	n.a	n.a	n.a	1488.5	0.8	1.2
Personal Consumption Expenditures	n.a	n.a	n.a	972.4	0.6	2.5
Durable Goods	n.a	n.a	n.a	144.5	1.2	5.1
As Percent of Pers. Cons.	n.a	n.a	n.a	14.9	0.7	2.8
Nondurable Goods	n.a	n.a	n.a	369.8	0.6	2.1
Services	n.a	n.a	n.a	458.1	0.3	1.9
Gross Private Domestic Investment	n.a	n.a	n.a	199.5	8.7	2.1
As Percent of GNP	n.a	n.a	n.a	13.4	8.1	0.8
Nonresidential, Fixed	n.a	n.a	n.a	162.0	0.7	-5.8
Residential	n.a	n.a	n.a	49.9	16.3	28.3
Net Exports	n.a	n.a	n.a	24.0	-11.8	-35.0
Government Purchases	n.a	n.a	n.a	292.6	-2.3	1.2
Federal	n.a	n.a	n.a	117.5	-5.8	2.7
State and Local	n.a	n.a	n.a	175.1	-0.2	0.1
GNP Gap (Full Empl. Minus Present GNP)*						
1972 Dollars (in billions)	n.a	n.a	n.a	182.6	0.6	20.4
Current Dollars (in billions)	n.a	n.a	n.a	389.6	1.9	26.1
Current Federal Budget Deficit 4/						
As Percent of GNP	n.a	n.a	n.a	-5.5	-6.6	-4.0
Inventory to Sales: Durable Goods in Mfg.*	n.a	n.a	n.a	2.21	-10.2	-8.7
New Orders to Shipments: Durable Goods*	n.a	n.a	n.a	1.02	2.3	2.5
Plant Capacity Utilization Rate in Mfg. 5/*	n.a	n.a	n.a	68.8	1.8	-3.9
MONEY AND CREDIT CONDITIONS						
Interest Rates						
Discount Rate	8.50	-8.1	-29.2	8.50	-8.1	-29.2
Prime Rate	n.a	n.a	n.a	10.88	-9.0	-33.1
Rate on Conventional Mortgages	13.20	-1.5	-12.7	13.36	-6.6	-14.6
Federal Funds Rate	n.a	n.a	n.a	8.65	-6.8	-39.2
Consumer Installment Credit Outstanding	n.a	n.a	n.a	342021	0.6	4.6
As Percent of Disposable Personal Income	n.a	n.a	n.a	15.2	-0.4	-1.5

Output, Expenditures, Money, & Credit Conditions

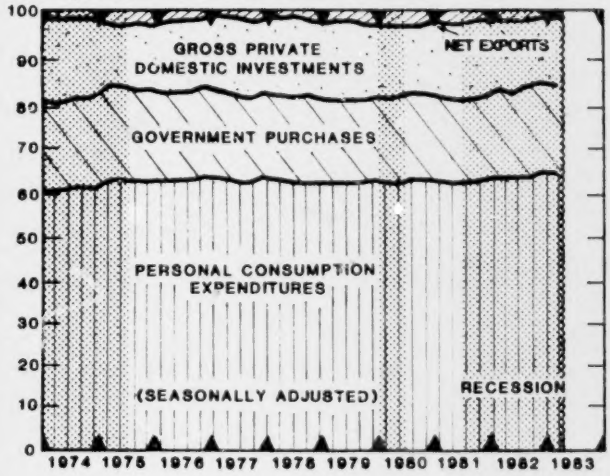
Potential & Seasonally Adjusted GNP



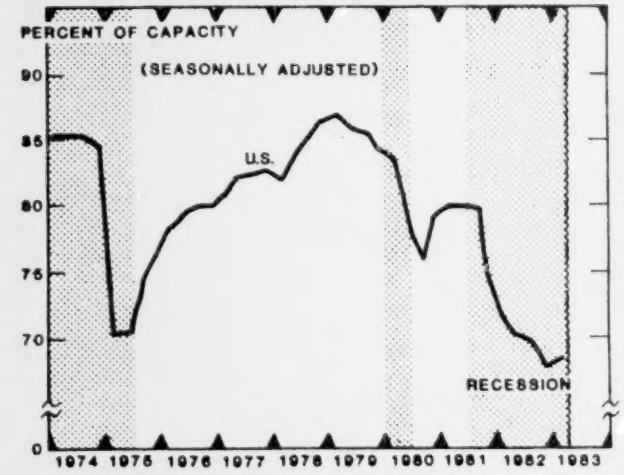
Index of Industrial Production



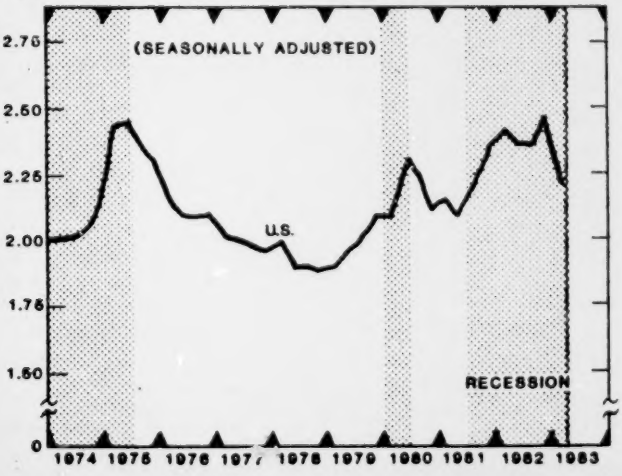
Composition of GNP in Percent



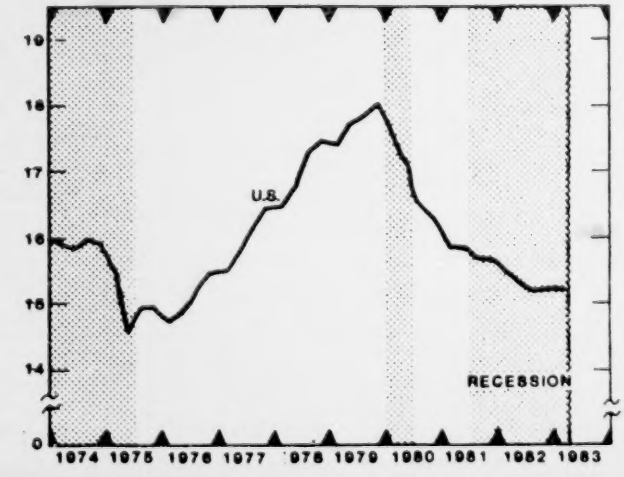
Plant Utilization Rates, Mfg.



Ratio, Inventory to Sales, Durable Mfg.



Ratio, Consumer Installment Debt to Disposable Personal Income, U.S.



Technical Notes

For the reader's convenience the notes which follow are organized in sequence for the pages which appear in the statistical section. Each note corresponds to the footnote or reference notation for the given page.

* Wherever an asterisk appears the data is seasonally adjusted.

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1/ Four percent is a generally agreed upon criteria for measuring full employment. It allows for the movement of persons between jobs. Labor Force Unemployment Rate less four percent, based on official estimates.
2/ Estimated worker hours expended in nonfarm payroll employment as a percent of potential worker hours assuming that each member of the nonfarm labor payroll labor force was employed at a standard rate of 40 hours per week.

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1/ The handbook unemployment rate is the estimate of unemployment prior to the Current Population Survey (CPS) adjustment.

Page S-7

1/ In billions of dollars at an annual rate.
2/ The contribution to total Personal Income of wages, salaries, and other labor income. Percent change entry in Labor Income Impact is the percent that the change in labor income comprises of the change in total Personal Income. This is not available for Minnesota on a quarterly basis.
3/ The figure for the quarter is the contribution to total Personal Income of proprietor's rental, dividend, and interest income. The percent change entry in Property Income Impact is analogous to the Labor Income Impact described in 2/ above.
4/ The contribution to total Personal Income of transfer payments (unemployment compensation, AFDC, etc.) The percent change entry is analogous to the Labor Income Impact in 2/ above.
5/ In dollars at an annual rate.
6/ In dollars per week.
7/ Real average weekly earnings are the average weekly earnings of production workers in manufacturing divided by the CPI.
8/ Annual data.
9/ Value is CPI-W (Urban Wage earners and clerical workers).

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1/ U.S. data annualized in thousands. Source: Bureau of the Census.
2/ Base Year is 1967. Source: Federal Reserve Board.
3/ Totals may not add due to rounding.
4/ Values shown in percent change columns are deficit as percent of GNP for period citied.
5/ Source: Federal Reserve Board.

Available Publications

Nonagricultural Wage & Salary Employment, Hours & Earnings, January 1975 - February 1983, Minnesota (May 1983)

Employment, Hours, and Earnings, January 1970-February 1983, Minneapolis-St. Paul Area (April 1983)

1980 Occupational Employment Statistics in Minnesota (May 1982)

1981 Occupational Employment Statistics in Minnesota (November 1982)

Important Minnesota Occupations by Industry (January 1983)

Minnesota Employment Outlook to 1985 (January 1983)

Minneapolis-St. Paul SMSA Employment Outlook to 1985 (March 1982)

Review of Labor and Economic Conditions and its Monthly Supplement (Recent Issues)

Statistical Supplement to the Annual Report of the Department of Economic Security (September 1981)

Unemployment Compensation Program Statistics: Total Wages, Taxable Wages, Contributions Due, and Benefits Paid, 1950-1978 (April 1980)

Minnesota Employment and Wage data by County (Fourth Quarter 1982) Limited number available for 1975-1981

Average Covered Employment & Wages by Economic Region for the Calendar Year 1982 by two Digits of Industry (also available for 1976-1980)

Occupational Hiring Patterns in Minnesota (October 1981)

Characteristics of Unemployment Insurance Claimants, 1981 (March 1982)

The Economic Outlook for 1983 (February 1983)

Minnesota Labor Market Information Directory (April 1982)

1982 Minnesota Salary Survey by Area (August 1982)

1982 Minnesota Hospitals and Nursing Homes Salary Survey (September 1982)

1982 Minnesota Wage Data by Industry and Size of Firm (September 1982)

Labor Market Information Summary for 1982 for Minnesota (August 1982), Minneapolis-St. Paul SMSA (May 1982), St. Cloud SMSA (May 1982), Duluth SMSA (August 1982), and Rochester SMSA (August 1982)

These publications are available upon request while supply lasts.

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